

**IN THE CLAIMS:**

1. (Cancelled)

2. (Currently amended) A method ~~according to claim 4~~ for storing and processing physiological mechanical data in a medical recording device, comprising:

sampling one or more physiological signals at a selected sampling rate;  
deriving physiological parameter values from the sampled signal to obtain  
parameterized signal data at a rate lower than the selected  
sampling rate of the physiological signal;  
storing the parameter values as they are determined in a temporary  
memory buffer for a predetermined storage interval;  
determining a statistical aspect of the stored parameter values in the  
temporary buffer upon expiration of the storage interval; and  
writing the statistical aspect as it is determined for a plurality of the  
predetermined storage intervals to a long-term memory buffer, the long-term  
memory buffer storing the statistical aspects for a long-term storage interval, the  
long-term memory buffer thereby storing statistical aspects having a temporal  
resolution of the parameter values corresponding to the predetermined storage  
interval of the temporary memory buffer, further comprising:  
allocating the temporary memory buffer into at least two different  
temporary memory buffers and programming a unique storage interval to each of  
the two different temporary memory buffers.

3. (Previously presented) A method according to claim 2, further comprising  
allocating the long-term memory buffer into at least two different long-term  
memory buffers each having a unique temporal resolution, wherein the unique  
temporal resolution of each long-term memory buffer is determined by the

predetermined storage interval of a respective one of the temporary memory buffers.

4. (Previously presented) A method according to claim 3, wherein the at least two long-term memory buffers comprise digital memory buffers.

5 - 8. (Cancelled)

9. (Previously presented) A method according to claim 3, wherein the unique temporal resolution comprises at least a one of: a coarse resolution having a relatively low temporal resolution, a medium resolution having a higher temporal resolution than said coarse resolution, and a fine resolution having the highest temporal resolution compared to said coarse resolution and said medium resolution.

10 - 11. (Cancelled)

12. (Previously presented) A method according to claim 9, wherein upon expiration of a predetermined storage interval or upon exceeding available memory storage of a given long-term storage buffer the following step is performed:

transferring a set of data comprising the statistical aspect or the stored parameter values from one of said fine resolution and said medium resolution to said coarse resolution and from said fine resolution to said medium resolution.

13. (Cancelled)

14. (Previously presented) A method according to claim 9, further comprising:  
allocating available memory for the stored parameters based at least in part upon a respective temporal resolution assigned to each of the stored parameters, wherein said respective temporal resolution comprise said coarse resolution, said medium resolution, said fine resolution.

15. (Previously presented) A method according to claim 14, wherein the allocating further comprises automatic partitioning of available memory based upon the number of stored parameters or the temporal resolution of the stored parameters.

16 - 25. (Cancelled)

26. (Currently amended) A computer readable medium comprising instructions for storing and processing physiological data in a medical recording device having continuous data collection and data storage of such data in multiple time-resolved tiers, comprising:  
instructions for sampling one or more physiological signals at a selected sampling rate;  
instructions for deriving physiological parameter values from the sampled signal to obtain parameterized signal data at a rate lower than the selected sampling rate of the physiological signal;  
instructions for storing the parameter values as they are determined in a temporary memory buffer for a predetermined storage interval;  
instructions for determining a statistical aspect of the stored parameter values upon expiration of the storage interval; and  
instructions for writing the statistical aspect as it is determined for each of a plurality of the predetermined storage intervals to a long-term memory buffer, the long-term memory buffer storing the statistical aspects for a long-term storage interval, the long-term memory buffer thereby storing the statistical aspects

having a temporal resolution of the parameter values corresponding to the predetermined storage interval of the temporary memory buffer according to claim 25, wherein the temporary memory buffer comprises at least two temporary memory buffers each having a unique predetermined storage interval.

27. (Previously presented) A medium according to claim 26, wherein the long-term memory buffer comprises at least two long-term memory buffers each having a unique temporal resolution corresponding to one of the unique predetermined storage intervals of an associated temporary memory buffer.

28. (Previously presented) A medium according to claim 27, wherein the at least two long-term memory buffers comprise digital memory buffers.

29- 32. (Cancelled)